APPLICATION UNDER UNITED STATES PATENT LAWS

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Invention: METHOD AND SYSTEM FOR RESERVING AIR CHARTER AIRCRAFT

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☒ Regular Utility Application

☐ Continuing Application
    ☐ The contents of the parent are incorporated
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☐ PCT National Phase Application

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☐ Substitute Specification
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   Sub. Spec. filed _____
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SPECIFICATION

Title: Method and System for Reserving Air Charter Aircraft

Inventors: Trevor Cornwell

FIELD OF THE INVENTION

[0001]   The present invention relates to computerized reservations methods and systems for accepting, tracking and completing reservations made by consumers of aircraft charter services provided by third party carriers and for creating and maintaining databases of third party carrier information.   More specifically, the present invention relates to a computerized on-line aircraft charter reservation and scheduling method and system that enables consumers to specify an itinerary, to either specify a price or receive a price for that itinerary for at least one aircraft and reserve an aircraft for completing the specified itinerary.

BACKGROUND

[0002]   Currently, the most common method for air travel is on a scheduled flight with a commercial carrier.   Various methods including accessing on-line databases exist for reserving seats on these scheduled flights.   Nevertheless, it is frequently desirable for an individual or group to have an itinerary that cannot be accommodated by commercial carriers. The alternative for such individuals and groups is to contract with a charter aircraft operator to accommodate the desired itinerary. Because charter aircraft operators tend to be relatively small and numerous, the charter aircraft industry is particularly fragmented. Consequently, it is typically difficult for charter aircraft consumers to comparison shop for aircraft charter options and prices. Needs, therefore, exist for a means of consolidating aircraft charter information in a manner that enables consumers of such services to rapidly and easily price and reserve charter aircraft services capable of accommodating a desired itinerary.

SUMMARY OF THE INVENTION

[0003]   It is accordingly an aspect of the present invention to provide a method and a system for determining the availability of aircraft for charter flights.

[0004]   It is another aspect of the present invention to provide a method and a system for maintaining a database of charter aircraft information.

[0005]   It is another aspect of the present invention to provide a method and a system enabling consumers to quickly and easily reserve aircraft for charter flights.

[0006]   It is another aspect of the present invention to provide a method and a system for rapidly calculating the cost of aircraft charter flights.

[0007]   It is another aspect of the present invention to provide a method and a system for calculating a number of alternative available aircraft charter flight options.

[0008]   It is another aspect of the present invention to provide a method and a system for permitting bidding on aircraft charter flights.

[0009]   It is another aspect of the present invention to provide a means for users to specify a desired price and determining if air charter flights can be arranged for that price.

[0010]   It is another aspect of the present invention to provide a method and a system for accomplishing the foregoing by making use of global communications networks such as the World Wide Web.

[0011]   The present invention satisfies these and other needs by providing a method and a system for enabling consumers to rapidly and easily price and reserve charter aircraft services. In a preferred embodiment, information concerning a plurality of charter aircraft is stored and maintained in a charter aircraft information database, preferably in a manner such that this information is accessible via global computer networks and/or local area networks.

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Such information as the current status, flight characteristics, present location, known future locations, occupancy capacity and operational costs for each charter aircraft is preferably included in the charter aircraft information database. The current status of the charter aircraft preferably includes the present and known future locations of the charter aircraft.

[0012]   The method and system of the present invention provides for receiving itinerary information from a user. In a preferred embodiment, at least one departure location and at least one destination location are received as itinerary information from a user. In addition, the user is able to designate more than one flight leg, typically to reserve a round trip charter. In another preferred embodiment, destination and departure times or ranges of times and the number of passengers to be accommodated are also received as itinerary information from a user.

[0013]   The method and system of the present invention further provides for identifying suitable charter aircraft using the charter aircraft information and the received itinerary information. In a preferred embodiment, identifying suitable charter aircraft is accomplished by eliminating charter aircraft having a negative status, by eliminating charter aircraft having inappropriate flight characteristics and by eliminating charter aircraft having a present location beyond a prescribed maximum relocation distance. This task is similarly accomplished instead by selecting charter aircraft having a positive status, by selecting charter aircraft having appropriate flight characteristics and by selecting charter aircraft having a present location within a prescribed maximum relocation distance. Identifying suitable charter aircraft also preferably takes into account the designated number of passengers and the occupancy capacity of each charter aircraft.

[0014]   The method and system of the present invention further provides for determining a charter price for at least one of the identified suitable charter aircraft.

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Preferably, the charter price is determined for each of the identified suitable charter aircraft. In a preferred embodiment, charter price is determined by calculating the cost of flying from a designated departure location to a designated destination location based on the cost of operating the charter aircraft and a calculated flight factor for the specific charter aircraft. The cost of operating each charter aircraft is retrievably stored in the charter aircraft information database. The calculated flight factor is based on either the distance between the departure location and the destination location or the flight time required to traverse that distance or both. Information about grid winds between the two locations is preferably taken into account when flight factors are calculated.

[0015]   The determination of charter price also preferably takes into account several additional factors, when applicable, that collectively are used to calculate a total charter price. For example, to determine the total charter price, the flight cost for a given charter aircraft takes into account the cost of repositioning the charter aircraft to the user's designated departure location(s), the cost of repositioning the charter aircraft to a post-charter location(s), the cost of relocating the charter aircraft from the user's first destination location(s) to an intermediate location(s), the cost of relocating the charter aircraft to the user's second designated departure location(s) and the cost of keeping the charter aircraft at the user's first destination location(s) until the second leg occurs.

[0016]   Typically, the total charter price for each of the identified suitable charter aircraft is then calculated based on the cost of operating the charter aircraft, the calculated flight cost for the charter aircraft and the lesser of the layover cost and the relocating costs. If repositioning costs are also necessary, these cost will be added to the flight cost.

[0017]   In another preferred embodiment, the method and system of the present invention further provides for accessing an airport information database, such as a Jeppesson

airport database containing airport specific information such as longitudinal and latitudinal coordinates, elevation and runway restrictions for each airport. The information contained in the airport information database is useful for eliminating charter aircraft that are incompatible for airports in the vicinity of the user specified departure location and destination location. The information contained in the airport information database is also useful for calculating flight time between specific airports.

[0018]   The method and system of the present invention further provides for transmitting, or otherwise making known to the user, the charter price for at least one of the suitable charter aircraft. Each outputted charter price is preferably accompanied by corresponding charter aircraft information from the charter aircraft information database.

[0019]   In a preferred embodiment, the method and system of the present invention further provides for enabling the user to select a charter aircraft to be reserved.

[0020]   In another preferred embodiment, the method and system of the present invention further provides for completing and confirming the reservation process once a user has selected a charter aircraft to be reserved.

[0021]   In an alternative embodiment, a charter price is received as itinerary information from a user. The charter aircraft information database is then used to identify charter aircraft that are suitable for accommodating the user at or below the specified charter price. Charter aircraft information about at least one of the identified suitable charter aircraft, if any, is then outputted or made known to the user. Finally, the user is either permitted or obligated to make a reservation for one of the identified suitable charter aircraft, and the reservation process is then completed, confirmed and, if desirable, reconfirmed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. 1 is a block diagram representation of a preferred embodiment of the present invention; and

[0023] FIG. 2 is a block diagram representation of the cost calculation used in the preferred embodiment of the present invention illustrated in FIG. 1.

DETAILED DESCRIPTION

[0024] FIG. 1 shows an overview of the method and system of the present invention for pricing and reserving charter aircraft services. A user desiring to price and/or reserve a charter aircraft is prompted to input itinerary information such as a designated departure location and a designated destination location. In a preferred embodiment, the designated departure location can either be an airport, a city or a region. Likewise, the designated destination location can also either be an airport, a city or a region. The designated departure location and the designated destination location need not be of the same type. For example, the designated departure location may be an airport, while the designated destination location may be a city.

[0025] In another preferred embodiment, the user is provided with a means for ascertaining the name and location of airports.

[0026] As part of the itinerary information, the user may also be prompted to supply additional information such as absolute or preferred departure dates, absolute or preferred departure times, absolute or preferred arrival dates, absolute or preferred arrival times and the number of passengers to be accommodated. In another preferred embodiment of the present invention, the user is provided with access to a calendar feature enabling the user to conveniently select departure and/or destination dates.

[0027] As part of the itinerary information, the user may also designate multiple departure locations and/or multiple destination locations if their flight plans are flexible. For example, the user may designate two departure airports and three destination airports.

[0028] As part of the itinerary information, the user may also designate the desire for a round trip between the designated departure location and the designated destination location. Likewise, the user may also designate multiple flight legs if the user desires aircraft charter service to two or more destination locations. For example, the user may wish to travel from city A to city B and then from city B to city C before returning back to city A, or the user may wish to travel from city A to city B and then from city B to city C where the aircraft charter will terminate.

[0029] In a preferred embodiment of the present invention, the system receives the user's itinerary information. The itinerary information is preferably inputted by the user through a global communications network such as the World Wide Web or a local area network.

[0030] In a preferred embodiment of the present invention, the system then accesses a charter aircraft information database containing information about a plurality of charter aircraft and the itinerary information is compared with this information to identify suitable charter aircraft. The aircraft information database preferably includes such information as status, flight characteristics, present location, known future locations, occupancy capacity and operational costs for each of the charter aircraft. The status of each charter aircraft can be either positive if the charter aircraft is available or negative if the charter aircraft is unavailable for such reasons as maintenance. The flight characteristics of each charter aircraft include decent rates, ascent rates, cruising speeds and cruising altitudes. The

operating costs of each charter aircraft includes daytime flight costs and nighttime flight costs.

[0031]   In a preferred embodiment of the present invention, the system enables charter aircraft operators to update the charter aircraft information database. The charter aircraft operators will preferably update such information as the status, flight characteristics, present location and operational costs of each of the charter aircraft they operate.

[0032]   In another preferred embodiment of the present invention, the system also accesses an airport information database containing information about a plurality of airports and the itinerary information is compared with the information in both databases to identify suitable charter aircraft. A Jeppesson airport database containing airport specific information such as longitudinal and latitudinal coordinates, elevation and runway restrictions can serve as the airport information database.

[0033]   In a preferred embodiment of the present invention, suitable charter aircraft are identified by taking into account several factors such as by determining (1) whether a given charter aircraft is compatible with the airport(s) within a prescribed radius of the user's departure location(s); (2) whether that charter aircraft is compatible with the airport(s) within a prescribed radius of the user's destination location(s); (3) whether that charter aircraft has a positive status; (4) whether that charter aircraft has appropriate flight characteristics for the desired flight(s); and (5) whether that charter aircraft has a present location within a prescribed radius of the user's departure location(s) immediately prior to the departure time. In addition, suitable charter aircraft can be identified by determining whether the charter aircraft also has sufficient seating capacity to accommodate the identified number of passengers.

[0034]   In a preferred embodiment of the present invention, a charter price is determined for at least one of the identified suitable charter aircraft by calculating a total charter price for each of the identified suitable charter aircraft. The total charter price for a given charter aircraft is calculated based on the cost of operating that specific charter aircraft and a calculated flight factor for flying that charter aircraft from the user's departure location(s) to the user's destination location(s). The system preferably obtains a cost of operating each charter aircraft from the charter aircraft information database and calculates the flight factor based on the user's itinerary information and the airport information database. For a given charter aircraft, the flight factor is calculated based either on an approximate flight time between the user's departure location(s) and the user's destination location(s) or an approximate flight distance between the user's departure location(s) and the user's destination location(s). Preferably, the user's departure location(s) is narrowed to a specific airport(s) and the flight factor is more or less accurately calculated based on the detailed information contained in the airport information database for the specific airport(s). Finally, grid winds between the user's departure location(s) and the user's destination location(s) are also preferably taken into account when calculating the flight factor.

[0035]   As previously discussed, charter aircraft may be identified as suitable even if they are not located at the user's designated departure location(s). Therefore, when calculating the total charter price, the system also preferably take into account a repositioning cost for those suitable charter aircraft that must be repositioned. Preferably, the repositioning cost is calculated based on the cost of operating that charter aircraft and a calculated repositioning factor for flying that charter aircraft from the pre-charter location of that charter aircraft to the user's departure location(s). The repositioning factor is calculated in the same manner as the flight factor. Naturally, the repositioning cost will vary depending upon the

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specific airport that the charter aircraft is repositioned to. Several airports will typically be considered in determining the total charter price.

[0036]   Frequently, and for a variety of reasons, charter aircraft cannot remain at the user's designated destination location(s) and must be relocated either back to the user's designated departure location or to another location. Therefore, when calculating the total charter price, the system also preferably takes into account a relocation cost for those suitable charter aircraft that must be relocated. Preferably, the relocation cost is calculated based on the cost of operating that charter aircraft and a calculated relocation factor for flying that charter aircraft from the user's departure location(s) and at least one post-charter location. The relocation factor is calculated in the same manner as the flight factor and the repositioning factor. Naturally, the relocation cost will vary depending upon the specific airport that the charter aircraft is relocated to after the charter has been completed. Several airports will typically be considered in determining the total charter price.

[0037]   As previously discussed, the system of the present invention preferably permits the user to designate round trip travel and multiple flight legs. Thus, the user can designate a first leg having a first departure location and a first destination location and a second leg having a second departure location and a second destination location. Naturally, the user can be permitted to simply specify the charter will be round trip, in which case, the first destination location will be the same as the second departure location and the second destination location will be the same as the first departure location.

[0038]   When the user either designates round trip travel or inputs multiple flight legs, a total flight cost is calculated by adding the flight costs for each leg of travel. Thus, for a round trip charter, the total flight cost will consist of an outbound flight cost and an inbound flight cost. Alternatively, the total flight cost for each identified suitable charter aircraft can

be calculated based on the operating cost of a given charter aircraft and the total flight factor. The total flight factor is calculated based on an approximate round-trip flight time or flight distance for flying between the user's departure location(s) and the user's destination location(s) and, as with a flight factor, grid winds between the user's departure location and user's destination location are preferably taken into account. For a multiple leg charter, the total cost will consist of a first flight cost, a second flight cost and so on such that the number of flight costs equal the number of flight legs.

[0039]   In addition, calculating the total charter cost preferably takes into account an outbound repositioning cost and an inbound repositioning cost. The outbound repositioning cost accounts for the possible necessity of repositioning a charter aircraft to the user's departure location(s), and the inbound repositioning cost accounts for the possible necessity of repositioning a charter aircraft from the user's second destination location to at least one post-charter location.

[0040]   As can be readily appreciated, for a round trip or multiple leg charter, the total charter price may be calculated based on different charter aircraft being used to accommodate each leg of the charter flight. Thus, calculating the total charter cost preferably takes into account an outbound relocation cost and an inbound relocation cost. The outbound relocation cost accounts for the possible necessity of relocating the suitable charter aircraft from the user's first destination location to at least one intermediate location. The inbound relocation cost accounts for the possible necessity relocating the suitable charter aircraft to the user's second departure location.

[0041]   In addition, calculating the total charter cost preferably takes into account a layover cost for keeping each of the suitable charter aircraft at the user's at least one destination location until the second leg occurs.

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[0042] In the preferred embodiment of the present invention, the total charter price also takes into account additional charges such as taxes, over-night stays and landing fees and extra operator costs which are based on distance, duration and number of assistants.

[0043] In another preferred embodiment of the present invention, the user is permitted to specify a charter price in addition to itinerary information. The system then conducts a reverse auction. When a charter price is specified, the specified charter price is compared with the total charter price(s) calculated for each of the identified suitable charter aircraft. If at least one total charter price is equal to or less than the specified charter price, the system will automatically reserve on of the identified suitable charter aircraft. Preferably, the suitable charter aircraft with the lowest total charter price is reserved.

[0044] In another preferred embodiment of the present invention, the system identifies and prices charter travel departing and arriving at alternative airports to those designated by the user. This feature can either be done automatically or at the request of the user. Preferably, the system identifies potential departure airports located within a prescribed radius of the user's designated departure airports and identifies potential destination airports located within a prescribed radius of the user's designated destination airport(s). Fifty (50) miles is a typical default for establishing the prescribed radius. Using these alternative airports as departure locations and destination locations, the system calculates a lowest charter price for accommodating the user and transmits the results along with accompanying charter aircraft and airport information.

[0045] In another preferred embodiment of the present invention, the system receives a posting from a charter aircraft operator specifying a departure location, a destination location, an occupancy limit, a starting price and an auction end time for at least one space on a charter aircraft. The posting is then transmitted to the user using a computer. The system

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then receives bids including an initial charter price bid that is equal to or greater than the starting price until the auction end time. After the initial charter price bid has been received and before the auction end time, the system will only process higher charter price bids. Next, at the auction end time, the system determines the highest received bid from the initial charter price bid and the higher charter price bid(s) and reserves space on the designated charter aircraft.

[0046] After the total charter prices have been calculated, the charter prices are transmitted, using a computer, to the user. In the preferred embodiment, the charter prices are accompanied by corresponding charter aircraft information. In addition, if more than one charter aircraft is identified as suitable, the charter prices are preferably first sorted based on one of several factors before being transmitted to the user. The suitable charter aircraft may be sorted by categories such as "lowest price," "fastest trip" or "maximum comfort" in order to facilitate the user's selection. The categories may either be designated by the system or selected by the user. Preferably, the system transmits a charter price and accompanying aircraft information for at least one charter aircraft in each category.

[0047] In a preferred embodiment of the present invention, the system enables the user to request a reservation from the list of transmitted charter prices. When the user makes a request, the system automatically notifies and confirms the reservation, preferably by electronic means. Preferably, after the user makes a request, an email is sent to the reservation system maintainer alerting the reservation system maintainer that a reservation has been requested by a user. Typically, such an email will be directed to the customer service/customer care division of the reservation system maintainer. An email is also sent to the user confirming the reservation request. Typically, such an email would also include terms and conditions of the transaction. This email or a subsequent email would also include

a manifest or confirmation form that the user must complete to finalize the reservation process. If the information were not already known, the confirmation form would preferably include space for the user to provide payment information. Finally, an email is also sent to the charter operator responsible for the selected charter aircraft. Customarily, this email mentions the reservation system maintainer's right of first refusal on that aircraft for a designated period of time and that during this designated period of time, the reservation system maintainer will confirm or cancel the reservation.

[0048] In a preferred embodiment of the present invention, the system will also reconfirm the reservation of the user selected charter aircraft, preferably by electronic means.

[0049] Many improvements, modifications and additions will be apparent to one skilled in the art without departing from the spirit and scope of the present invention as described herein and defined in the following claims.